Geomorphology Study of the Middle Mississippi River

APPLIED RIVER ENGINEERING CENTER

US Army Corps of Engineers
St. Louis District

Arrival of the Steamboat

- 1817: Zebulon M. Pike arrives in St. Louis
  - St. Louis Population is 3000
- 1858: 3600 Annual Steamboat Arrivals
  - St. Louis Population is over 160,000
- 1874: Completion of Eads Bridge, large increase in railroad traffic, sharp decline in steamboat traffic
  - Beginning of the end of the Steamboat Era.

- As steamboat traffic increased the river became more dangerous
- Over 4000 steamboat accident deaths between 1810 and 1850

“The Mississippi changes its channel so constantly that the pilots used to always find it necessary to run down to Cairo to take a fresh look”

-Mark Twain

SOLUTION

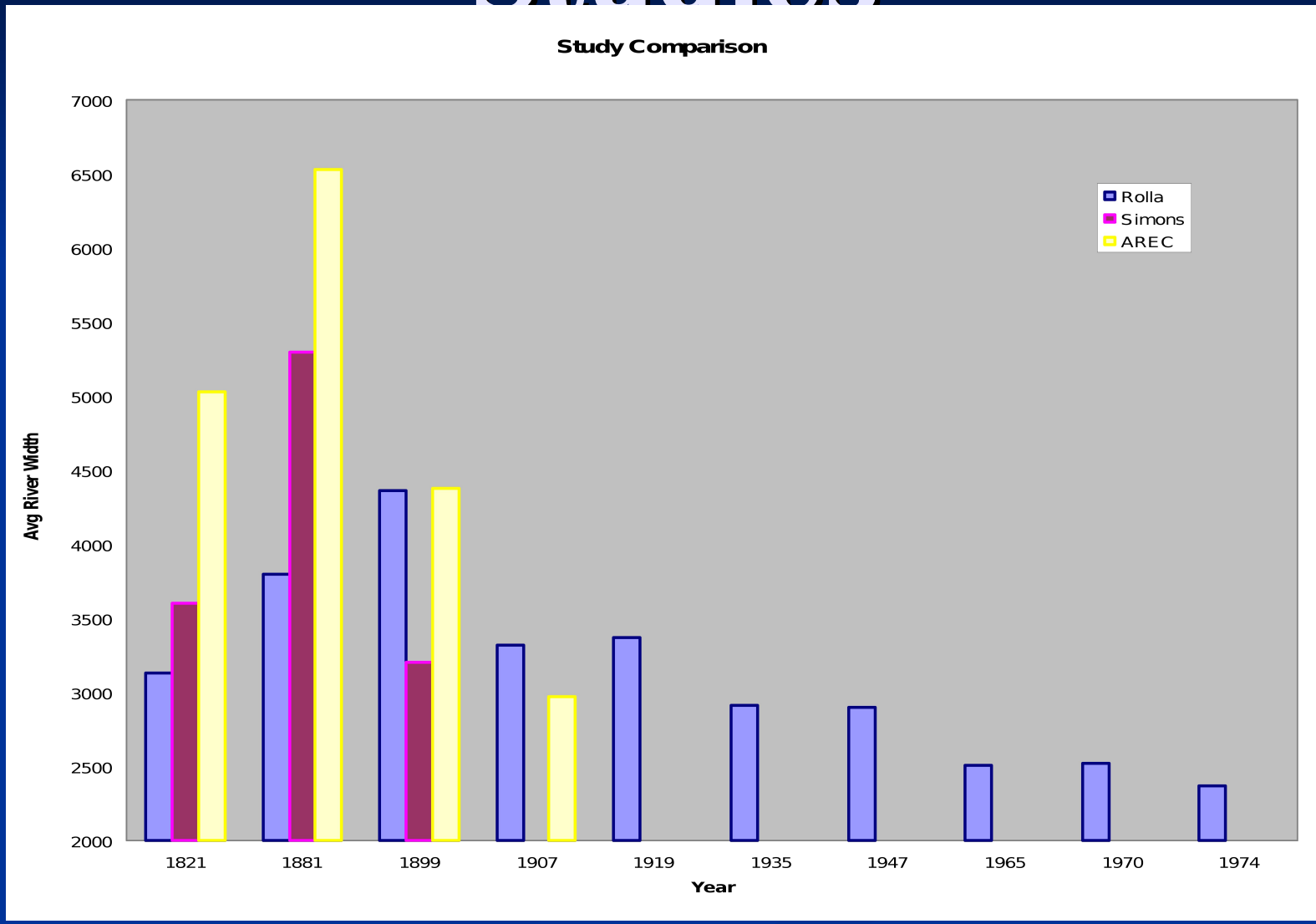
- Snagboats
- 1879: Mississippi River Commission
  - Purpose was to “Improve and give safety and ease to navigation” and “prevent destructive floods” on the Mississippi River
  - Beginning of Federal River Training Structures

Masterplan

"to make the improvement continuous, working downstream from St. Louis, by reclaiming land and building up new banks, thus reducing the width of the river to the uniform width of about 2500 feet"

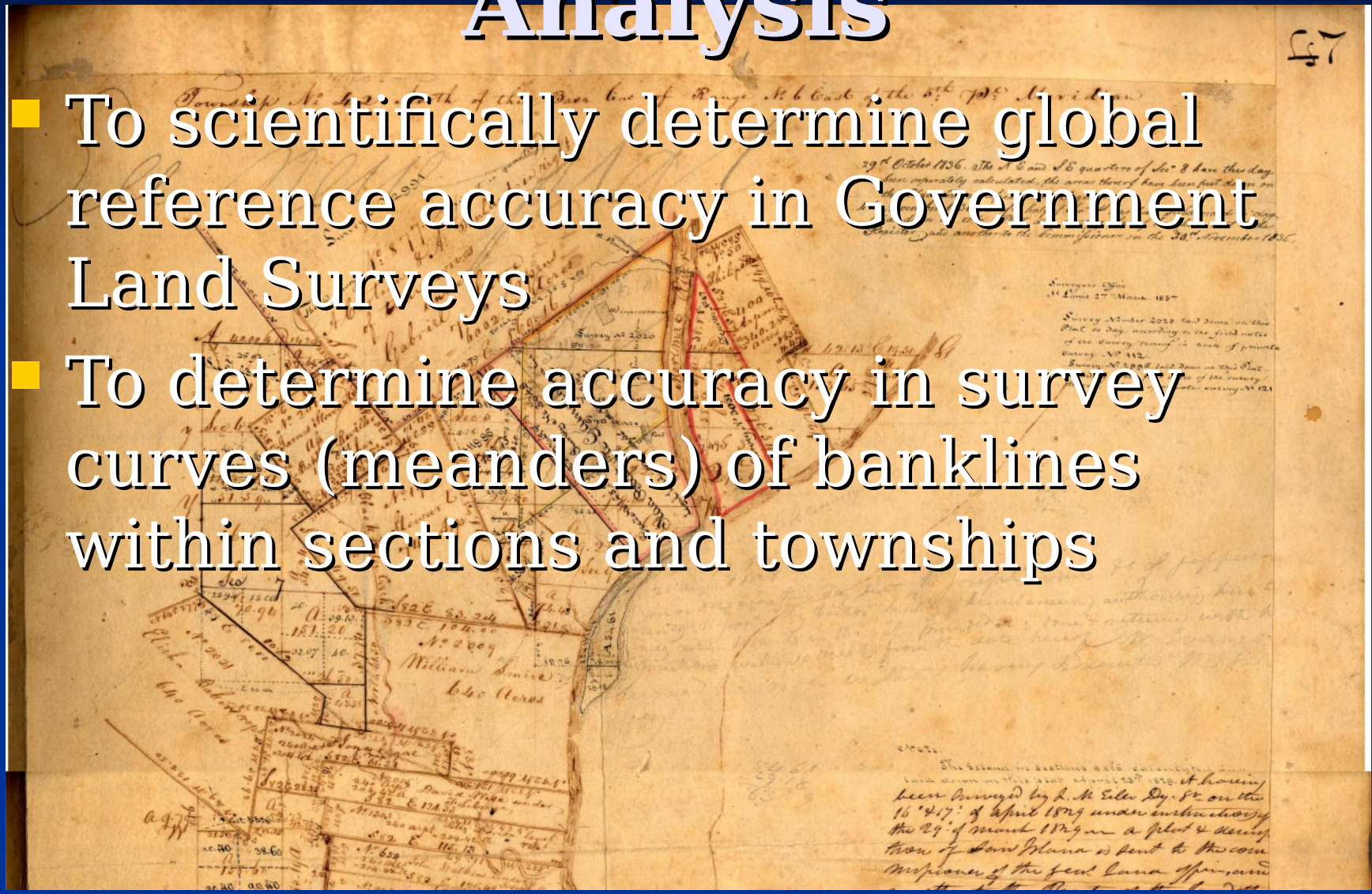
"restore what once existed, and to do it in such a way that the restoration shall be permanent"

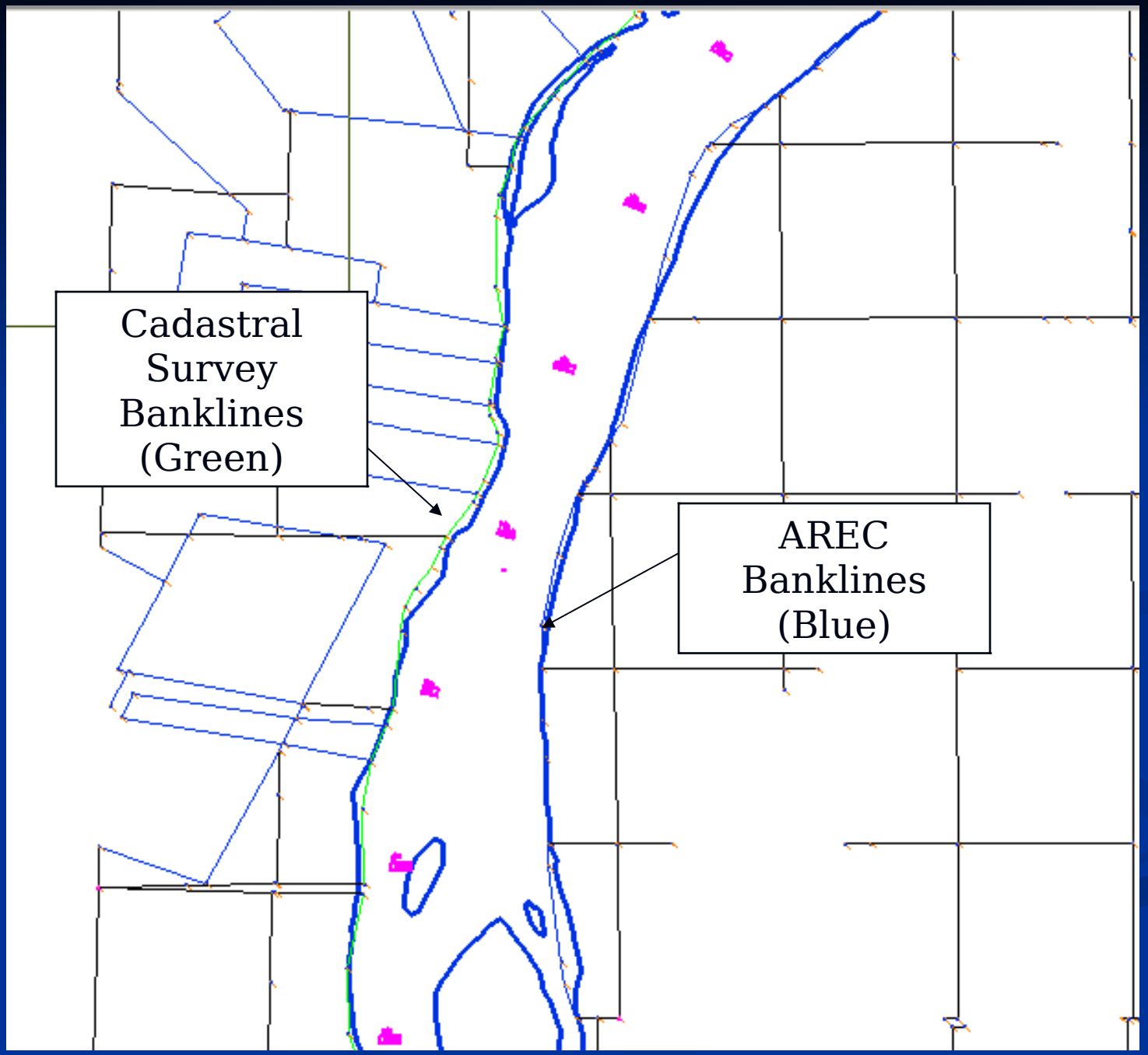
Other Geomorphology Studies

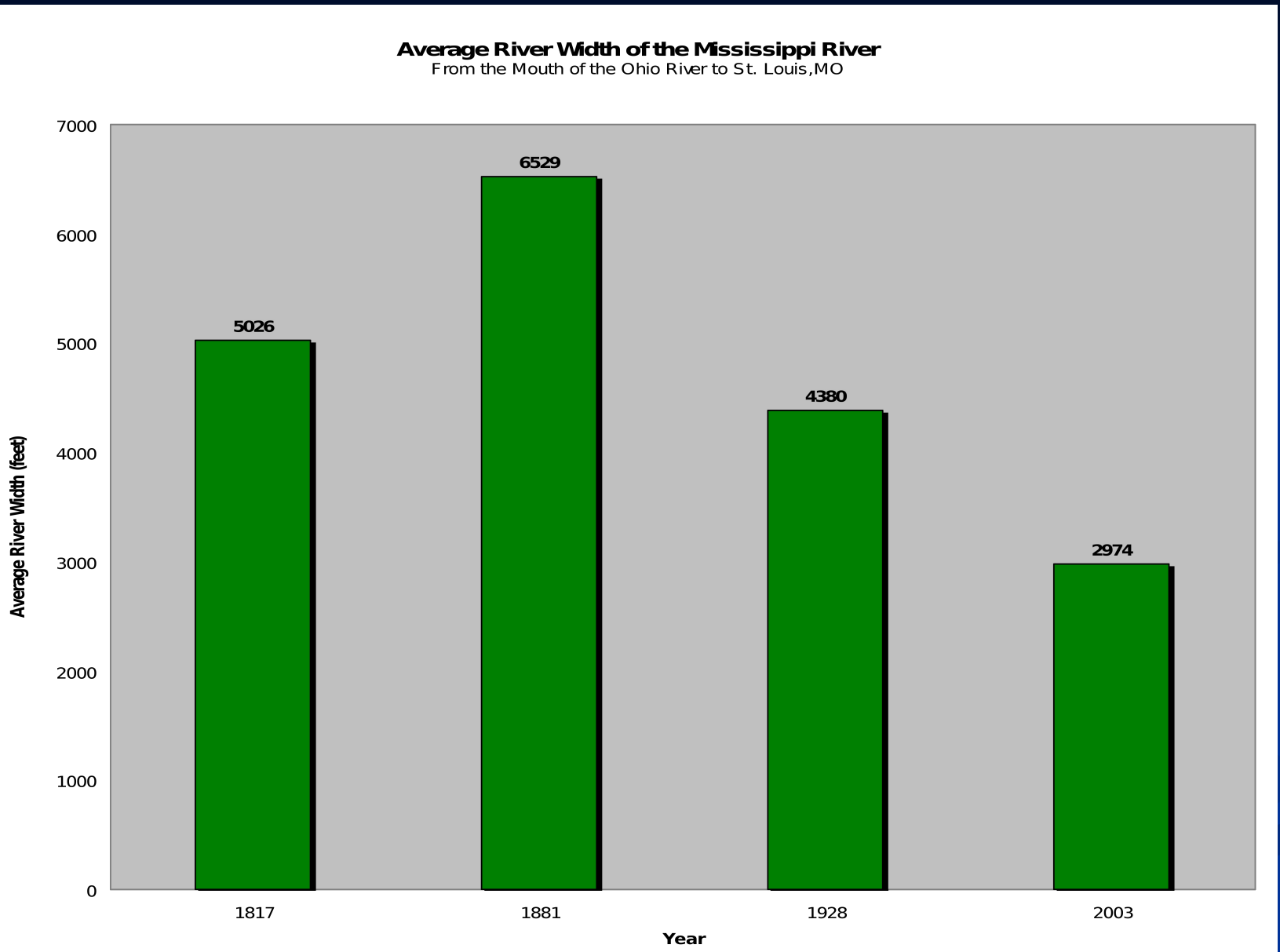


Cadastral Survey Analysis

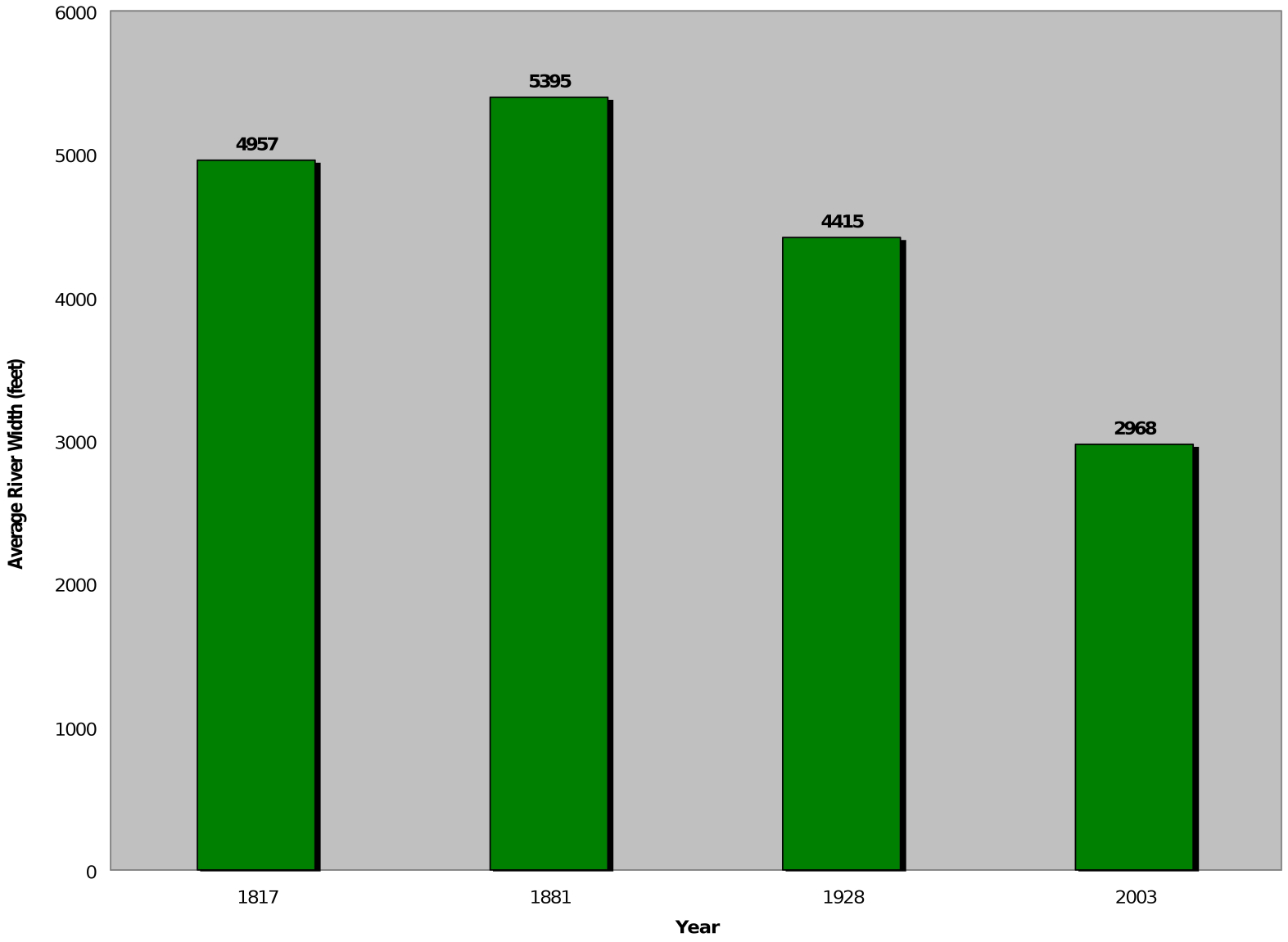
- To scientifically determine global reference accuracy in Government Land Surveys
- To determine accuracy in survey curves (meanders) of banklines within sections and townships

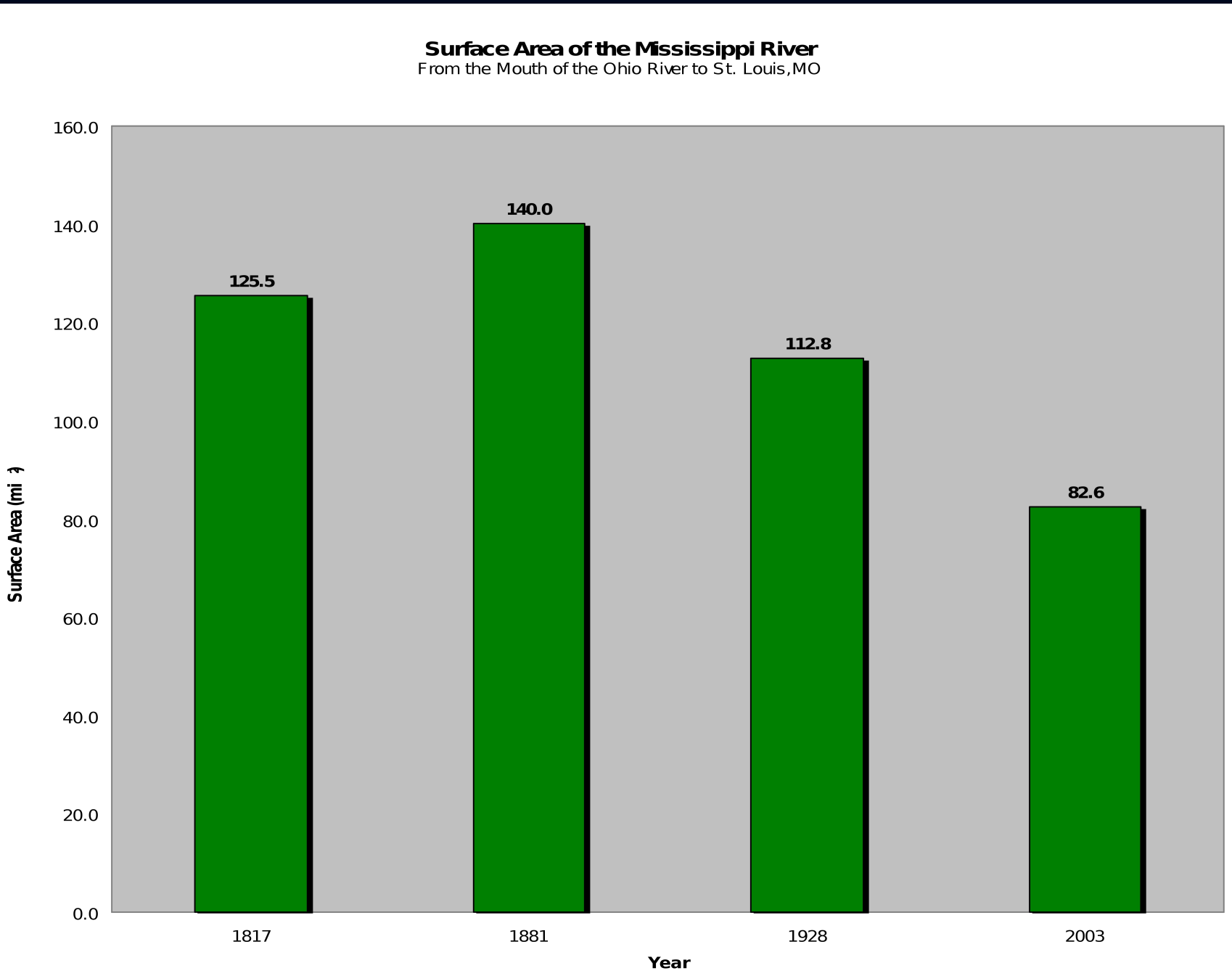


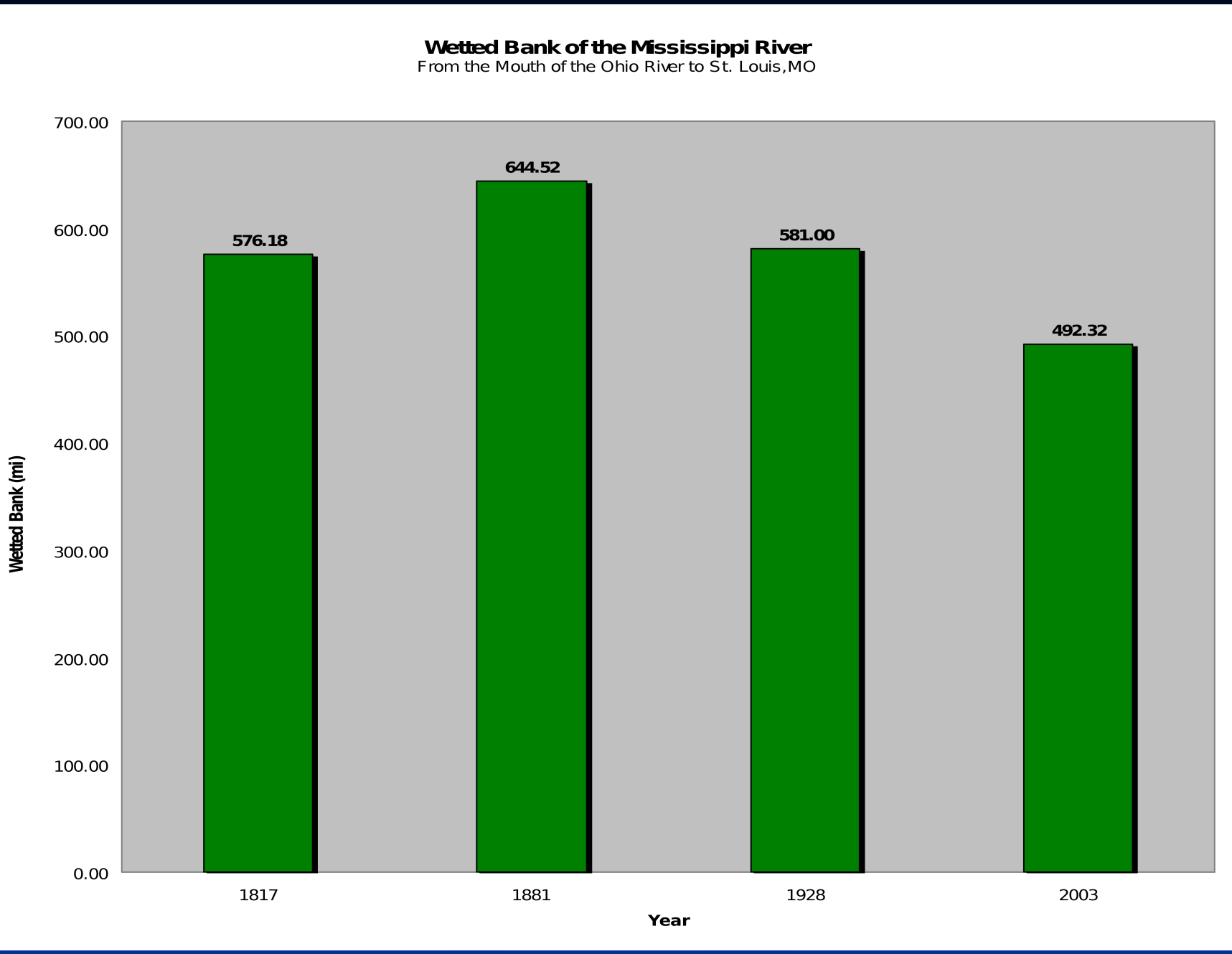

Cadastral Survey Banklines (Green)
AREC Banklines (Blue)


Average River Width of the Mississippi River
From the Mouth of the Ohio River to St. Louis,MO
Average River Width (feet)
7000
6000
5000
4000
3000
2000
1000
0
5026
6529
4380
2974
1817
1881
1928
2003
Year

Average River Width of the Mississippi River:
Excluding the Kaskaskia Island Reach (RM 110-120)
From the Mouth of the Ohio River to St. Louis,MO




Surface Area of the Mississippi River
From the Mouth of the Ohio River to St. Louis,MO
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Surface Area (mi 2)
125.5
140.0
112.8
82.6
1817
1881
1928
2003
Year

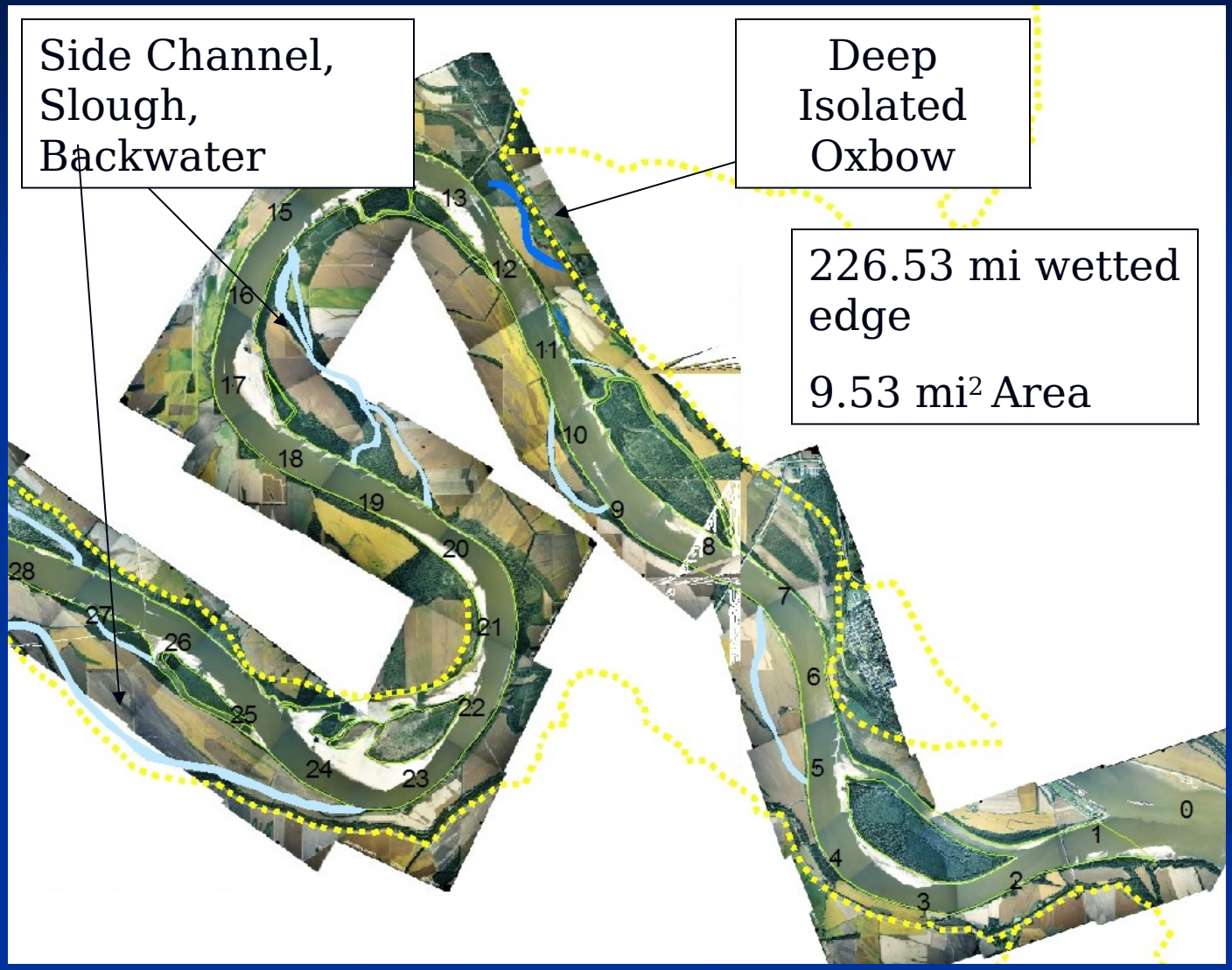

Wetted Bank of the Mississippi River
From the Mouth of the Ohio River to St. Louis,MO
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
Wetted Bank (mi)
576.18
644.52
581.00
492.32
1817
1881
1928
2003
Year

Perception of the River

- 1817-1960s (around 150 years):
  - Means of transporting goods and people
  - Little concern for aquatic habitat, direct sewage dumping, chemicals etc..
- 1960s-Present
  - Ecosystem, Habitat
  - Means of transporting goods and people

RIPARIAN CORRIDOR

Restoration Potential



QUESTIONS?